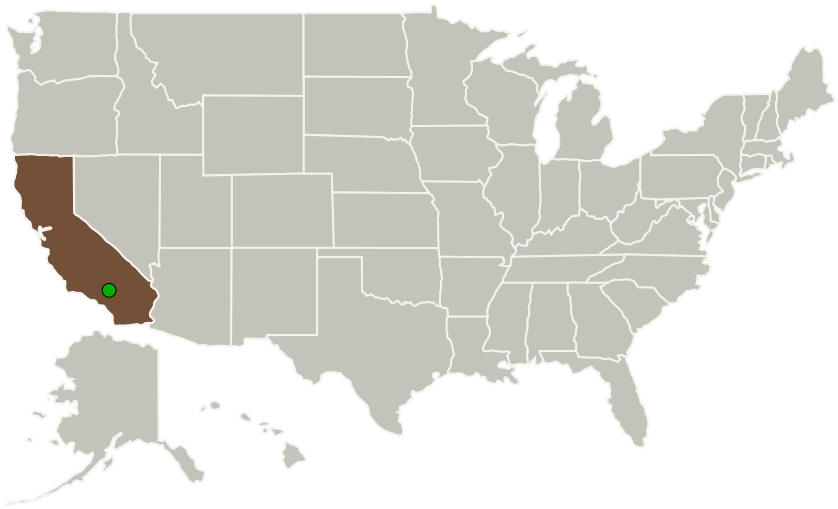
Combustion/Emission Species Monitoring Ground and Flight Aeronautical Research Using a Gas Microsensor Array, Phase I

Completed Technology Project (2011 - 2011)

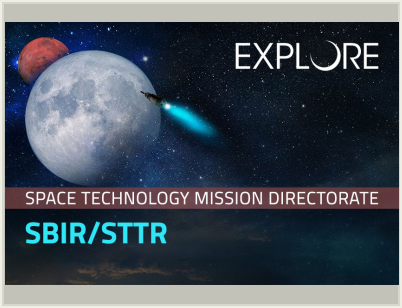
Project Introduction

Makel Engineering, Inc. (MEI) and the Ohio State University (OSU) propose to develop high sensitivity, miniaturized and in-situ operated gas sensors for the real time monitoring of chemical composition of turbine engine combustors and/or exhaust streams for real-time, in-flight propulsion system measurements to improve NASA's aeronautical flight test capabilities. Gas microsensor arrays developed by MEI, OSU and our technical development partners including NASA have been demonstrated for ground test usage to quantify composition of critical constituents in turbine engine exhaust products, e.g., CO, CO2, NOx, O2, HC (unburned hydrocarbons) and H2. These sensor systems provide the basis for the proposed NASA SBIR effort, which will also leverage development of packaging for extractive emissions testing developed for the DoD with support from NASA researchers.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Makel Engineering, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	Chico, California
Armstrong Flight Research Center(AFRC)	Supporting Organization	NASA Center	Edwards, California



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Primary U.S. Work Locations
California

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140180)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Makel Engineering, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Benjamin Ward

Co-Investigator:

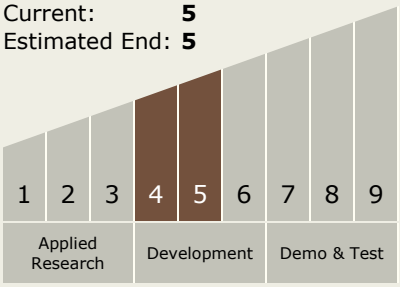
Benjamin Ward

Combustion/Emission Species Monitoring Ground and Flight Aeronautical Research Using a Gas Microsensor Array, Phase I

Completed Technology Project (2011 - 2011)

Technology Maturity (TRL)

Start: **4**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX13 Ground, Test, and Surface Systems
  - TX13.2 Test and Qualification
    - TX13.2.7 Test Instruments and Sensors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System